Linux Concepts You Should Know If you are going for Linux Admin Interview

For a **Linux interview (SysAdmin / Linux Admin / RHCSA / RHCE / DevOps basics)**, interviewers usually test you across **concepts + commands + real-world scenarios**.

Below is a **complete, structured list of IMPORTANT LINUX CONCEPTS** you should prepare. Treat this as a **master checklist**.

1️⃣ Linux Basics & Architecture

- What is Linux?
- Linux distributions (RHEL, CentOS, Ubuntu, Debian, SUSE)
- Kernel vs User Space
- Shell vs Terminal
- CLI vs GUI
- Linux directory structure (`/`, `/etc`, `/var`, `/usr`, `/home`, `/boot`, `/tmp`)
- Linux boot process (BIOS → GRUB → Kernel → init/systemd)

2️⃣ File & Directory Management

- Absolute vs Relative paths
- File types (, `d`, `l`, `c`, `b`, `s`, `p`)
- Important commands:
  - `ls`, `pwd`, `cd`

    - `cp`, `mv`, `rm`
    - `mkdir`, `rmdir`
    - `find`, `locate`
    - `stat`, `tree`
- Hidden files
- Inodes
- Hard link vs Soft link

3️⃣ File Permissions & Ownership

- Permission types: read, write, execute
- Permission notation (rwx, numeric 755)
- `chmod`, `chown`, `chgrp`
- Default permissions & `umask`
- Special permissions:
    - SUID
    - SGID
    - Sticky bit
- Access Control Lists (ACL):
    - `getfacl`, `setfacl`

4️⃣ User & Group Management

- User types (root, system, normal)
- `/etc/passwd`, `/etc/shadow`, `/etc/group`
- Commands:
    - `useradd`, `usermod`, `userdel`
    - `groupadd`, `groupdel`

    - `passwd`, `su`, `sudo`
- Password aging policies
- Switching users
- Login vs non-login shell

5️⃣ Process Management

- What is a process?
- PID, PPID
- Foreground vs Background process
- Process states
- Commands:
    - `ps`, `top`, `htop`
    - `nice`, `renice`
    - `kill`, `killall`, `pkill`
    - `jobs`, `bg`, `fg`
- Zombie & orphan processes
- Load average

6️⃣ Disk & File System Management

- Disk naming (`/dev/sda`, `/dev/nvme0n1`)
- Partition types (primary, extended, logical)
- Filesystem types (ext4, xfs, vfat, swap)
- Commands:
    - `lsblk`, `blkid`
    - `df`, `du`
    - `mount`, `umount`

- `fsck`
- `/etc/fstab`
- Swap space (create, enable, disable)

7️⃣ LVM (Logical Volume Manager)

- Why LVM?
- Components:
  - Physical Volume (PV)
  - Volume Group (VG)
  - Logical Volume (LV)
- Commands:
  - `pvcreate`, `vgcreate`, `lvcreate`
  - `lvextend`, `lvreduce`
  - `resize2fs`, `xfs_growfs`
- Snapshot basics

8️⃣ Package Management

- RPM vs YUM vs DNF
- Repository concept
- Commands:
  - `rpm -qa`, `rpm -ivh`
  - `yum install/remove/update`
  - `dnf`
- Dependency resolution
- Installing local RPMs

9️⃣ Networking Concepts (Very Important)

- IP address, subnet, gateway, DNS
- Static vs DHCP
- Commands:
  - `ip a`, `ip r`
  - `nmcli`
  - `ping`, `traceroute`
  - `ss`, `netstat`
  - `curl`, `wget`
- Network configuration files
- Port & socket basics

🔟 SSH & Remote Access

- What is SSH?
- SSH authentication (password vs key-based)
- `ssh`, `scp`, `rsync`
- SSH config files
- Passwordless login
- SSH security best practices

1️⃣1️⃣ System Services & systemd

- What is systemd?
- Service states
- Commands:
  - `systemctl start/stop/restart`
  - `systemctl enable/disable`

- `systemctl status`
- Targets vs runlevels
- Service unit files

1️⃣2️⃣ Boot & Shutdown

- GRUB configuration
- Boot targets
- Single user / rescue mode
- Reboot vs shutdown commands
- Reset root password

1️⃣3️⃣ Log Management & Monitoring

- Importance of logs
- Log files:
  - `/var/log/messages`
  - `/var/log/secure`
  - `/var/log/boot.log`
- `journalctl`
- Log rotation (`logrotate`)
- Basic system monitoring tools

1️⃣4️⃣ Text Processing & Editors

- `vi/vim` (very important)
- `nano`
- Text commands:
  - `cat`, `less`, `more`

- `head`, `tail`
- `grep`, `egrep`
- `awk`, `sed`
- `cut`, `sort`, `uniq`, `wc`

1️⃣5️⃣ Shell Scripting Basics

- Shell types (bash, sh)
- Variables
- Conditional statements (`if`, `case`)
- Loops (`for`, `while`)
- Exit status
- Cron jobs (`crontab`)
- Environment variables

1️⃣6️⃣ Security Basics

- SELinux:
  - Modes (enforcing, permissive, disabled)
  - Contexts
  - `getenforce`, `setenforce`
- Firewall:
  - `firewalld`
  - Zones, services, ports
- File security best practices

1️⃣7️⃣ Backup & Archiving

- `tar`

- `gzip`, `bzip2`, `xz`
- `rsync`
- Backup strategies

1️⃣8️⃣ Virtualization & Containers (Bonus)

- KVM basics
- Virtual machines vs containers
- Docker basics (images, containers)
- Use cases

1️⃣9️⃣ Troubleshooting Scenarios (Very Important)

- Server not reachable
- Disk full issue
- High CPU / Memory usage
- Service not starting
- Permission denied errors
- Network connectivity issue

2️⃣0️⃣ Cloud & DevOps Exposure (Optional but Valuable)

- Linux on AWS / Azure
- EC2 basics
- CI/CD awareness
- Ansible basics

🔥 Interview Tip (From Experience)

👉 **Concept + command + real scenario = selection**

👉 Having Knowledge of Ansible Automation is a Plus

👉 Having Certificates like RHCSA & RHCE are Plus